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AGRICULTURAL EXPERIMENT STATION
WILMON NEWELL, Director
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ROSE CANKER

By WILLIAM B. SHIPPY
Associate Plant Pathologist, Florida Experiment Station

The fact that rose plants are short-lived under Florida conditions is due to a great extent to destructive cankers which develop on the canes. Such cankers may appear on any part of the cane and from the point of origin spread either upward or downward. Frequently they begin in pruning wounds and spread down the cane more or less rapidly and kill part or all of it in a comparatively short time. This kind of canker often causes failure of plants within a few months after they are set in the garden. Although the list of canker diseases is still incomplete, several types have been described, including brown canker, crown canker, stem canker, brand canker and cane blight. Of these, brown canker has received the most study, and since other canker diseases have many points in common with brown canker, this will be described as the typical canker disease.

Brown canker has been observed on about 175 varieties of roses, including Teas, Hybrid Teas, Hybrid Perpetuals, Pernetianas, Bengal or China roses, Hybrid Sweetbriers, Dwarf Polyanthas, Tea Polyanthas, Multiflora Hybrids, Wichuraiana Hybrids, Noisettes, and Noisette Hybrids. Rugosa, Moss and Brier roses appear to be resistant or immune to the disease.

CAUSE

Canker is caused by a parasitic fungus*. Like other fungus diseases, canker is spread by spores of the causal fungus. Moisture and other environmental conditions being favorable, these spores soon germinate on the leaves, stems, or blossoms of the plant, penetrate the tissues and cause a dead spot. After developing for a time in the rose tissue, resulting in the destruction of invaded cells, the fungus produces more or less spherical fruiting structures within which large quantities of spores are formed. These are forced to the surface and are carried to other parts of the plant or to adjacent plants by wind, rain, pruning shears, and other agencies. Here they start new infection.

SYMPTOMS

In the case of most varieties, first signs of infection on the canes consist of spots varying in color from purple to white. The small cane lesions usually are slightly raised, circular, purple in color, and quite superficial. Later they become grayish-white, and when large numbers of these tiny spots are massed together, a whitish patch is produced. Some-

* Brown canker is caused by *Cryptosporella umbrina* Jenkins, formerly *Diaporthe umbrina*. Other canker diseases are caused by different fungi.

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times little damage results the first year. Eventually, however, the superficial, white-colored lesions become surrounded by a purple margin which continues to enlarge, leaving a brown, dead area behind. In time the cane is girdled and killed. Cankers may extend for several inches down the cane, and upon reaching the crown kill other canes or even the entire plant.

Foliage and blooms are attacked. Leaf infections vary a great deal in appearance, depending upon the type of rose. On some types of roses the spots are much like those on the canes, purple with or without white centers. Reddish spotting is typical for the Polyantha varieties, and on Hybrid Teas and Perpetuals dark gray, circular spots are produced on the upper surface of the leaves. Usually only the outer petals of blossoms are infected. Diseased petals become tan or brown-colored, and dotted with the fruiting bodies of the fungus.

CONTROL

Careful selection of disease-free planting stock; the prompt removal and burning of all dead or cankered wood, old blossoms, and fallen foliage; attention to location, spacing, and pruning of plants to insure quick drying, and the frequent application of a suitable fungicide are the essential measures in rose canker control. Newly-received plants should be examined critically for stem cankers and lesions, and all diseased plants rejected. In the removal of dead or diseased wood, cuts should be made well below the affected areas, since the tissues actually invaded extend beyond the part visibly infected. In this operation it would be advisable to dip pruning shears or other instruments used in some sterilizing solution, as formaldehyde or alcohol, before each cut is made. Also, since many cankers originate with pruning wounds, coating the cut surfaces with some protective material (melted grafting wax or other good wound dressing) immediately after pruning will reduce the amount of dieback. A thorough application of a good fungicide at this time is also beneficial.

The importance of keeping the stems coated at all times with a fungicide cannot be overemphasized, since once the fungi gain entrance into the bark and wood, fungicides will not prevent development of the disease, as they do not penetrate the tissues. Since one or more of the cane blights or cankers and black spot usually occur on roses wherever they are grown in the state, and since good fungicides are preventive measures for these diseases, control measures may be combined quite largely into one program, using the same fungicide for control of both kinds of diseases.

Applications should be made at about weekly intervals during most of the year, frequent applications being particularly necessary during periods of rain, fog, or heavy dews. Available dusts include copper-lime dust or one of the high-grade sulphurs guaranteed mostly of 300-mesh fineness. The sulphurs have proved more effective than copper-lime dust but sometimes cause severe foliage injury when applied during hot weather. Difficulty of applying dusts on windy days and foliage injury caused by sulphur fungicides may sometimes be avoided by applying either late or very early in the day. Light, thorough applications of either type of dust may be made without great discoloration of the foliage. The foliage may be either wet or dry, although dry foliage permits better coverage with dusts.

The list of spray materials from which selection may be made is extensive and includes the following: copper silicate, "basic copper sulphate," red copper oxide, ammoniacal copper carbonate, bordeaux mixture, basic copper chloride, copper sulphate-soap-ammonia spray, lime-sulphur 1:80, and the wettable sulphurs. Considering effectiveness, appearance of the plants, and freedom from foliage injury, the copper silicate or "basic copper sulphate" sprays seem preferable for year-around use. Bordeaux mixture, basic copper chloride, and copper sulphate-soap-ammonia sprays are particularly effective, but unsightliness of the residue deposited on the plants limits their use mostly to the summer and early fall when defoliation usually becomes so extensive that flower production is unsatisfactory anyway.

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